

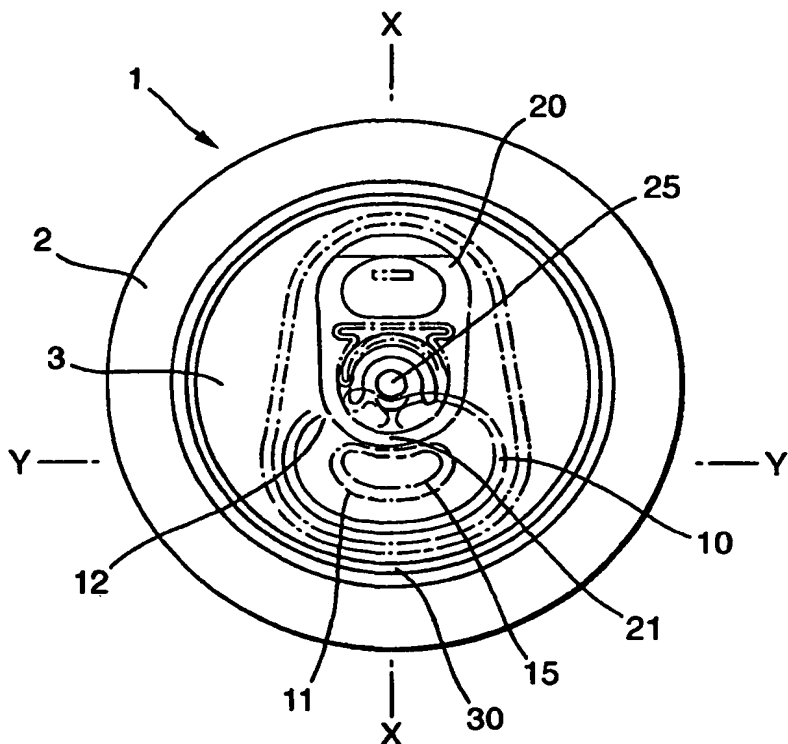


INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : B65D 17/32	A1	(11) International Publication Number: WO 00/34137 (43) International Publication Date: 15 June 2000 (15.06.00)
(21) International Application Number: PCT/GB99/03899 (22) International Filing Date: 24 November 1999 (24.11.99) (30) Priority Data: 9826602.6 4 December 1998 (04.12.98) GB (71) Applicant (for all designated States except LS US): CROWN CORK & SEAL TECHNOLOGIES CORPORATION [US/US]; 11535 S. Central Avenue, Alsip, IL 60803-2599 (US). (71) Applicant (for LS only): CARNAUDMETALBOX PLC [GB/GB]; Downsview Road, Wantage, Oxfordshire OX12 9BP (GB). (72) Inventor; and (75) Inventor/Applicant (for US only): FIELDS, Brian [GB/US]; 16W660 Mockingbird Lane #19J, Hinsdale, IL 60521 (US). (74) Agent: SMITH, Debra, Jane, Clare; Carnaudmetalbox plc, Downsview Road, Wantage, Oxfordshire OX12 9BP (GB).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>

(54) Title: SMALL DIAMETER CAN END WITH LARGE OPENING**(57) Abstract**

A can end having a small diameter centre panel (3) and an opening (11) of particular aspect ratio to improve the pourability and drinkability characteristics of the opening, compared to can ends having conventional openings.



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
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AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
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DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference W0110W0	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/GB 99/ 03899	International filing date (day/month/year) 24/11/1999	(Earliest) Priority Date (day/month/year) 04/12/1998
Applicant CROWN CORK & SEAL TECHNOLOGIES CORPORATION et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.
☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :
- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

- ☒ the text is approved as submitted by the applicant.
- ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

- ☐ the text is approved as submitted by the applicant.
- ☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

- ☒ as suggested by the applicant.
- ☐ because the applicant failed to suggest a figure.
- ☐ because this figure better characterizes the invention.
- 1 _____
☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/GB 99/ 03899

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

Line 1: "...panel (3)..."

Line 2: "opening (11)..."

INTERNATIONAL SEARCH REPORT

International Application No

GB 99/03899

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 B65D17/32

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 IPC 7 B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 97 29960 A (ALUMINUM CO OF AMERICA ;MCELDOWNEY CARL (US)) 21 August 1997 (1997-08-21) figures 1-4	1-6
A	US 5 711 448 A (CLARKE III MILTON W) 27 January 1998 (1998-01-27) cited in the application the whole document	1-4, 6



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

° Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
 "E" earlier document but published on or after the international filing date
 "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
 "O" document referring to an oral disclosure, use, exhibition or other means
 "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
 "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
 "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
 "&" document member of the same patent family

Date of the actual completion of the international search

16 February 2000

Date of mailing of the international search report

24/02/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

Martin, A

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

GB 99/03899

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9729960	A	21-08-1997	AU 2275797 A EP 0958178 A	02-09-1997 24-11-1999
US 5711448	A	27-01-1998	AU 705788 B AU 3172195 A BR 9504036 A CA 2158379 A CN 1125679 A EP 0704382 A JP 11255236 A JP 2957930 B JP 8268429 A	03-06-1999 28-03-1996 24-09-1996 16-03-1996 03-07-1996 03-04-1996 21-09-1999 06-10-1999 15-10-1996

02

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C.20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year)
07 August 2000 (07.08.00)

International application No.
PCT/GB99/03899

Applicant's or agent's file reference
W0110WO

International filing date (day/month/year)
24 November 1999 (24.11.99)

Priority date (day/month/year)
04 December 1998 (04.12.98)

Applicant
FIELDS, Brian

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
28 June 2000 (28.06.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Zakaria EL KHODARY

Telephone No.: (41-22) 338.83.38

REC'D 11 SEP 2000

WIPO

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference W0110WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB99/03899	International filing date (day/month/year) 24/11/1999	Priority date (day/month/year) 04/12/1998
International Patent Classification (IPC) or national classification and IPC B65D17/32		
Applicant CROWN CORK & SEAL TECHNOLOGIES CORPORATION et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 4 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 28/06/2000	Date of completion of this report 05.09.2000
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Lendfers, P Telephone No. +49 89 2399 2933 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB99/03899

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-8 as originally filed

Claims, No.:

1-6 as originally filed

Drawings, sheets:

1/2,2/2 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB99/03899

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims 1-6
	No: Claims
Inventive step (IS)	Yes: Claims 1-6
	No: Claims
Industrial applicability (IA)	Yes: Claims 1-6
	No: Claims

2. Citations and explanations

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB99/03899

Section V:

The invention relates to an easy open can end comprising a circular centre panel with a rupturable score line therein, the score line defining the periphery of a non-removable tear panel, a non-detachable tab having a nose portion and a rear portion, and a connection between the tab and the centre panel which acts as a pivot about which the tab can be rotated out of the plane of the centre panel, such that in use, the rear portion of the tab is lifted to cause the nose portion of the tab to press down on the tear panel, thereby rupturing the score line and swinging the tear panel out of the plane of the centre panel to create an opening, the opening having a major axis and a minor axis, the minor axis located on a diameter of the centre panel and the major axis located perpendicular to said diameter.

Such an easy open can end is known from document US-A-5 711 448, being the closest prior art document. This document provides can ends having larger openings in order to improve pourability and drinkability.

The aim of the present invention is to provide an easy open, stay on tab can end, having an opening with improved pourability and drinkability characteristics but suitable for use on ends having a smaller diameter centre panel than conventional, standard ends.

According to the invention, the diameter of the centre panel is less than 1.835 inches (46.6 mm) and the opening has an area of less than 0.5 square inches (323 mm²) and an aspect ratio (major axis : minor axis) of between 1.3 and 1.7.

The combination of the features of independent claim 1 is neither known from, nor rendered obvious by, the available prior art. Therefore, the subject-matter of independent claim 1 is new and inventive (Articles 33(2) and 33(3) PCT).

Consequently, the subject-matter of dependent claims 2 to 6 fulfils as well the requirements of novelty and inventive step. Furthermore, claims 1 to 6 are considered as susceptible of industrial application.

Section VII:

The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

SMITH, Debra Jane C.
CARNAUDMETALBOX PLC
Downsview Road
Wantage
Oxfordshire OX12 9BP
GRANDE BRETAGNE

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing (day/month/year)	05.09.2000
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Applicant's or agent's file reference W0110WO	IMPORTANT NOTIFICATION
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International application No. PCT/GB99/03899	International filing date (day/month/year) 24/11/1999	Priority date (day/month/year) 04/12/1998
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Applicant CROWN CORK & SEAL TECHNOLOGIES CORPORATION et al.
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1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/	Authorized officer
---------------------------------------	--------------------



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Berger, K

Tel. +49 89 2399-2576



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference W0110WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB99/03899	International filing date (<i>day/month/year</i>) 24/11/1999	Priority date (<i>day/month/year</i>) 04/12/1998
International Patent Classification (IPC) or national classification and IPC B65D17/32		
Applicant CROWN CORK & SEAL TECHNOLOGIES CORPORATION et al.		

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3. This report contains indications relating to the following items:
 - ☒ Basis of the report
 - ☐ Priority
 - ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - ☐ Lack of unity of invention
 - ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - ☐ Certain documents cited
 - ☒ Certain defects in the international application
 - ☐ Certain observations on the international application

Date of submission of the demand 28/06/2000	Date of completion of this report 05.09.2000
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Lendfers, P Telephone No. +49 89 2399 2933 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB99/03899

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1-8 as originally filed

Claims, No.:

1-6 as originally filed

Drawings, sheets:

1/2,2/2 as originally filed

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- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB99/03899

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-6
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-6
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-6
	No:	Claims	

2. Citations and explanations

see separate sheet

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see separate sheet

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Consequently, the subject-matter of dependent claims 2 to 6 fulfils as well the requirements of novelty and inventive step. Furthermore, claims 1 to 6 are considered as susceptible of industrial application.

Section VII:

The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).